

Prof. Dr. Jochen Klein

Professor of Pharmacology and Clinical Pharmacy

In support of



Scientific career and education

- 1976-1981 Student at University of Heidelberg School of Pharmacy. 1st state examination 1978; 2nd state examination 1980.; 1981 "Approbation" (license) as pharmacist (equivalent to R.Ph.).
- 1981/82 Graduate student at Emory University School of Medicine, Departments of Biochemistry and Pharmacology (one-year DAAD stipend).
- 1983-1987 Graduate student at Johannes Gutenberg University of Mainz. Advisor: Franz Oesch, Ph.D. (Department of Toxicology, School of Medicine). 1987 Ph.D. (summa cum laude, "excellent"), Johannes Gutenberg University of Mainz School of Pharmacy.
- 1988-1992 Postdoctoral and Senior Research Associate at Department of Pharmacology, Johannes Gutenberg University of Mainz School of Medicine. Advisor: Konrad Löffelholz, M.D.
- 1991 Certification "Specialist in Toxicology" DGPT (an advanced diploma issued by the German Society of Pharmacology and Toxicology; since 1998 Eurotox Registered Toxicologist).
- 1993 Certification "Specialist in Pharmacology" DGPT (an advanced diploma issued by the German Society of Pharmacology and Toxicology).
- 1992-1996 "Wissenschaftlicher Assistent" (Assistant Professor) at Department of Pharmacology, Johannes Gutenberg University of Mainz School of Medicine.
- 1996-2001 "Hochschuldozent" (University Docent) at Department of Pharmacology, Johannes Gutenberg University of Mainz School of Medicine.
- 2001-2002 "Außerplanmäßiger Professor" (non-tenured professorship) at Department of Pharmacology, Johannes Gutenberg University of Mainz School of Medicine.
- 2002-2007 Associate Professor, Department of Pharmaceutical Sciences, Texas Tech School of Pharmacy, Amarillo, TX. Tenure was awarded in March, 2006.
- since 2007 Full Professor (W3), Department of Chemistry, Biochemistry and Pharmacy, Johann Wolfgang Goethe University of Frankfurt, Frankfurt, Germany.

Professional and academic service, honors

- Grant reviewer for various funding organisations (since 1992) including NIH/NCCAM, Alzheimer Association, German Research Foundation etc.
- Ad hoc Reviewer for >100 journal articles from >30 different journals (since 1990)
- More than 60 scientific oral communications at national and international scientific conferences and in departmental seminar series.
- Major advisor for 5 Ph.D. and 7 M.D. students. Member of >20 doctoral committees.
- Mentor and laboratory advisor of 9 predoctoral and 4 postdoctoral associates.
- Member and Chairman, Research Advisory Committee of the TTUHSC School of Pharmacy (2002-2004)
- Member and Chair of several Faculty Search Committees at TTUHSC (2002-2006)
- Member of the Graduate Program Committee and Graduate Council, TTUHSC
- Member in numerous university committees at Univ. of Heidelberg and Univ. of Mainz as representative of students and of scientific staff, including a term (1995-97) as a Senator for the Johannes Gutenberg University of Mainz (elected).
- Member of the Organizing Committee of the Spring Meeting of the German Society for Pharmacology and Toxicology (1996-2002)
- Member of the Local Organizing Committee, and Proceedings Editor, IX. ISCM International Symposium on Cholinergic Mechanisms (Convener: K. Löffelholz)
- State examiner of students of dentistry (1993-2002) and medicine (1997-2002)
- Invited lecturer, Advanced courses in pharmacology and toxicology for postdoctoral fellows pursuing the degree of "Specialist in pharmacology" or "Specialist in toxicology" of the German Society for Pharmacology and Toxicology (1991-2002)
- Boehringer Ingelheim Prize for Medical Research for work on the "Homeostasis of brain choline" (1992)

Research expertise

- In vivo-microdialysis to evaluate central cholinergic systems (rats and mice).
- Middle cerebral artery occlusion in mice (stroke model).
- Basic animal experimentation: anesthesia, injections, blood and CSF withdrawal, arterio-venous differences.
- Measurements of cholinergic parameters: HACU/LACU, AChE etc.
- Basic behavioural analysis of rats and mice (neurological and cognitive testing).
- Brain slices as in vitro-models of ischemia; synaptosomes and synaptoneuroosomes, e.g. for ion flux assays.
- Primary cell cultures of neurons and astrocytes, e.g. for fluorescence microscopy (fura-2) and neurotoxicity assays.
- High-performance liquid chromatography for the determination of acetylcholine and choline in the fmol range.
- Analysis of phospholipids and choline metabolites.
- Measurements of phospholipase activation, e.g. phospholipase D by transphosphatidylolation assay.
- Basic techniques in protein chemistry, cell and molecular biology (e.g. protein purification, electrophoresis, PCR, cell permeabilization with bacterial toxins).

Research Accomplishments

- Identification of dihydrodiol dehydrogenase as a detoxifying pathway in the metabolism of carcinogenic aromatic hydrocarbons.

- Description of dynamics of choline entry into and release from the brain, and the parameters determining precursor control of acetylcholine synthesis. Development of the “homeostasis of brain choline” hypothesis.
- Development of a novel choline release assay to follow NMDA receptor activation during hypoxia, and to monitor membrane breakdown in vivo.
- Demonstration of neuroprotective properties and anti-edema effects of bilobalide (from Ginkgo) and hyperforin (from St. John’s wort) using brain slices and middle cerebral artery occlusion in vivo. Contributions to bilobalide’s mechanism of action.
- Investigations of acetylcholine release in animal models such as rats with neuronal grafts, amyloid-bearing mice, transgenic mice overexpressing acetylcholinesterase (AChE), and AChE knockout animals.
- Suggestion of a novel hypothesis to explain fetal alcohol syndrome by the ethanol-specific disruption of the phospholipase D pathway.

Funding

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Membership in professional societies

- American Society for Pharmacology and Experimental Therapeutics (ASPET)
- American Association of Pharmaceutical Scientists (AAPS)
- Society for Neuroscience (SfN)
- German Society for Pharmacology and Toxicology (DGPT)
- German Pharmaceutical Society (DPhG)
- German Society for Neuroscience (NWG)